MOBI-DIC: MOBIle DIssemination of loCal information in Peer-to-Peer Wireless Networks, Phase I
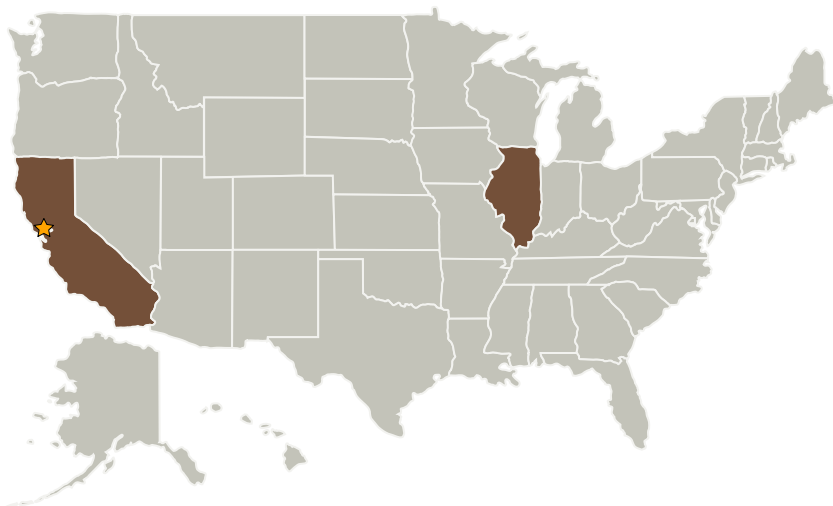
Completed Technology Project (2006 - 2007)

Project Introduction

Information Technology (IT) is a key element in the successful achievement of NASA's strategic goals. Modern IT tools and techniques have the capability to redefine many design and operational processes as well as enable grand exploration and science investigations. This proposal plans to address NASA's needs for innovative communication concepts for autonomous systems that require local information dissemination among mobile entities. We will explore a peer-to-peer paradigm for local dissemination of information among surface-based assets that are in geographic proximity. In this paradigm, a set of mobile objects (astronauts, rovers, robots, sensors, etc.) form a Mobile Ad-hoc NETwork (MANET), and they communicate with each other via short-range wireless technologies such as IEEE 802.11 and Bluetooth. We propose to develop a novel software toolkit that enables efficient local information dissemination applications in such an environment. The heart of this toolkit is a distributed peer-to-peer (P2P) algorithm that disseminates information intelligently based on the semantics of the information. This algorithm does not rely on any infrastructure, central server, or routing data structures, and therefore provides a higher survivability of the network than the traditional data dissemination techniques.

Primary U.S. Work Locations and Key Partners

MOBI-DIC: MOBIle DIssemination of loCal information in Peer-to-Peer Wireless Networks, Phase I

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
⭐Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Pirouette Software Consulting	Supporting Organization	Industry	Chicago, Illinois

Primary U.S. Work Locations	
California	Illinois

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Ouri Wolfson

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  └ TX05.3 Internetworking
    └ TX05.3.3 Information Assurance